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No talent no progress! An attitudinal study on rail careers with a sample of rail professionals.

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Abstract

There are many definitions and understandings of a word 'talent'. Since a 'talent' can be interpreted in various ways this issue of defining a 'talent' in the railways is even more challenging due to complexity of the railway sector. Over the last two years 76 railway professionals worldwide have been asked to complete a 9-question career sheet where two of the key questions asked were 'What is a Talent?' and 'Why the rail industry should engage with talents?'. The paper presents analyses of responses given by rail professionals including personal reasons why the professionals decided to join the industry and opinions about challenges the industry currently faces. The expected outcomes of the analyses are to provide guidance for the railway industry in terms of recruiting and retaining new talented workforce.

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1 Introduction

1.1 Definition of a 'talent'

It has recently been recognised in the railway community that there is an increasing need for attracting and retaining new workforce [11, 17], especially in Europe. The need for the new workforce is based on two main reasons: an ageing workforce and rapid developments in technology. To fill a generation gap caused by an ageing workforce skilled individuals will have to be recruited. Moreover, to keep up with rapid developments in technology, such as digitalization, urbanization, automation, etc. [1], the recruited individuals will have to be well qualified and able to use innovation and transferable skills in their work for the rail sector. Therefore the rail industry started talking about attracting and recruiting talented individuals to join the sector.

According to Oxford Dictionaries [12] a talent is a natural aptitude or skill and a talented individual is a person who has a natural ability to be good at something, especially without being taught a skill he or she is good at [2]. Therefore a person possessing a talent for e.g. maths or for programming has above average ability in maths or in programming [6]. By bringing more talents to the rail sector, and using their 'above average' abilities in science, technology, engineering, maths, management, administration, social sciences, research, etc., the industry will be able to modernise faster and introduce more of intelligent solutions to the benefit of customers and the environment. An alternative view, expressed by a railway professional, is that "Talent (...) means people. The right (number of) people in the right job, at the right time and at the right place with the right knowledge, experience and tools to perform reliably" [13].

No matter which view is followed, there is a well recognized need for new talents in the railways and the industry started developing initiatives and strategies aimed at attracting and retaining talented individuals.

1.2 Variety of rail initiatives

Rail initiatives addressed to potential rail talents from various target groups, from school pupils, university students, professionals to the general public, have been gaining popularity in the UK, Europe and beyond. Examples of such initiatives are presented in tab. 1 and include small-scale competitions like 'iRail' in Derby, UK as well as country-wide events like 'Rail Careers Week' in Australia. Most of such initiatives are supported by local and national railway companies and organisations (e.g. universities, rail media) interested in changing the image of the railway careers as well as hunting for new potential employees, attracted to the railways and talented in a wide spectrum of disciplines, from maths to project management and from engineering design to human factor research.

School level	University level	Professional level	General public
Transport of the Future – a youth transport competition initiated in Russia and open to foreign entrants age 11-19, supported by UIC, international, annual	IMECHE Challenge – a competition for university students supported by a professional organisation for mechanical engineers, UK-wide, annual	InnoTrans Career Concept – exploits the opportunities offered by the trade fair, to interest new generations in rail careers and to provide them with guidance to enter the industry, international, bi-annual	Rail Week – a new initiative run by Young Rail Professionals and rail industry partners with an aim of promoting rail careers to young people and the general public, UK-wide, launched in 2016
iRail – a local competition with rail industry involvement addressed to students, UK, annual	Rail day and Railroad Night – an event organised in collaboration with rail industry promoting careers in rail and rail courses at Michigan Tech, US, annual	Next Generation Rail – an event for young rail academics and professionals interested in networking, sharing ideas and upskilling, UK, annual	Rail Careers Week – rail industry initiative promoting variety of rail careers to schools and the general public, Australia, annual
Youth Transport school at Michigan Tech – a pre-university level students' summer school, US, annual	RailNewcastle – a 3-week rail and logistics summer school co-funded by EC, Europe-wide, 2012-2014	Young Rail Professionals – an organisation for young people working in the railway and passionate about the industry, UK	Railfuture – an organisation campaigning for better railways and open for membership, UK

Tab. 1 Selection of initiatives promoting the rail industry and careers in the railways

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Despite the fact that more and more initiatives promoting the rail industry are organised and events promoting the railways occur more often than decades ago, majority of them are still run at a quite local scale without a global coverage.

1.3 *Railway Talents project*

To address the need for new talents and to promote variety of careers in the railways the International Union of Railways (UIC), uniting 240 rail companies worldwide, in 2014 launched a new project titled 'Railway Talents'. The aim of the Railway Talents is to "create a better future for railways" [14].

In order to meet the aim of the Railway Talents project three objectives have been set [14]:

- Development of an efficient management development programme to prepare a new generation of railway talents working on domestic and international challenges;
- Creation of a strong & sustainable foundation for fostering international cooperation amongst the young talents in the railway sector;
- Promotion of prospective careers in the railway sector.

Since the launch of the Railway Talents projects a series of activities, from Rail Careers Matrix, tips for rail managers to eLearning website, have been initiated to promote the railways as a career option to people from the industry and beyond.

2 *Background*

A myth of the rail industry being a place for men to deliver maintenance-related jobs with a reluctance to innovation is still present in the XXI century society [4, 8, 9, 10, 11, 16]. Rail careers are not attractive to graduating engineers [7]. Moreover, rail does not appear to be an attractive career option to women who represent half of the accessible pool of talents [17]. This poor image is often totally wrong and unfair in the light of new challenges such as digitalisation and automation currently happening on the rail, as well as in terms of complexity and sustainability of the system as a whole. This perception is present partly due students and careers advisors' limited knowledge about rail careers [7].

It has been realised by the industry that complexity of the railway sector has to be communicated to the public and potential talents more effectively. As a response, a number of resources, such as 'Rail Careers' website in Australia or profiles on a UK-based National Careers Service website have been created.

At a global scale a 'Rail Careers Matrix' [15] has been developed within the Railway Talents project showcasing rail professionals and academics from around the world with the aim of promoting variety of careers and skills used in the railway sector. Fig. 1 shows that the matrix is organised in three levels (strategic, tactical and operational) and in seven groups (infrastructure, vehicles, operations, signalling, economics, administration and academia) covering the whole spectrum of careers within the rail industry. A next natural step forward was to collect a sample of rail professionals having careers fitting at various levels and in different groups on the Matrix.

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RAIL CAREERS MATRIX

LEVEL GROUP	STRATEGIC	TACTICAL	OPERATIONAL
INFRASTRUCTURE	Managing Director Infrastructure	Infrastructure Planner	Track Inspector
VEHICLES	Managing Director Vehicles	Vehicle Design Engineer	Maintenance
OPERATIONS	Managing Director Operations	Timetable Planner	Train Crew
SIGNALLING	Managing Director Signaling	Signalling Planner	Signaling Inspector
ECONOMICS	Managing Director Commercial	Sales Director	Sales Assistant
ADMINISTRATION	Managing Administration Director	Administration Manager	Admin Assistant
ACADEMIA	Dean	Group Manager	Research Assistant

Rail Careers Matrix is a project aiming to classify jobs available within the railway industry using a matrix of 3 levels (strategic, tactical and operational) and 7 main groups of jobs. One example of a job title within each level/group matrix is presented in each box. Matrix updated: 02/04/2015.



Fig. 1 Rail Careers Matrix [15]

3 Methodology

A template with nine questions in a MS Power Point (PPT) format was developed to collect basic information about how rail professionals got into the industry and what inspired them to consider a career in the sector. The purpose of the data collection was to build a database of contacts with variety of careers in the railway sector, which could then be published online to inspire potential talents to join the industry. In addition to the PPT template, an online form with identical set of questions was available on the Railway Talents website.

The nine questions asked about the following:

1. Name
2. Job title/company
3. Qualifications
4. Career
5. Why did you choose to work for the rail industry?
6. What inspired you at the time and what influenced your choice?
7. How does it feel to be in the rail industry? Are your expectations fulfilled?
8. What are the challenges?
9. What is a talent? Why the rail industry should engage with talents?

Between 2014 and spring 2016 the PPT template was circulated via email to various UIC contacts from academia and industry. In addition, an online form was available to individuals who wanted to share their rail career experience. Also, people were asked to attach their picture to the completed template in order to avoid anonymity of individuals and to give more credibility to the Rail Career Sheet project. Fig. 2 presents an example of a completed Rail Career Sheet.

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RAILWAY CAREER SHEET	
1	Name: Qian Zi (UK)
2	Job Title/Company: PhD student, NewRail, Newcastle University
3	Qualifications: BEng, MEng
4	Career: 1 year Assistant Quantity Surveyor, Singapore; 1 year Research Assistant/Associate Part-time at School of Architecture, Planning and Landscape, Newcastle University.
5	Why did you choose to work for the rail industry? I have big interested with station design and safety of underground transport system.
6	What inspired you at the time and what influenced your choice? I was inspired by my supervisor who first introduced me to this topic. The transportation environment and safety to prevent accident and terrorist attack in underground space still have great potential for development.
7	How does it feel to be in the rail industry? Are your expectations fulfilled? The rail industry is still a rapidly developing industry and needs people with professional skills and competence in learning.
8	What are the challenges? The challenge from my perspective is how to introduce, implement and integrate more research to rail industry.
9	What is a talent? Why the rail industry should engage with talents? The talent from inherent is limited. The talent is the curiosity for knowledge and the consistency of enterprise.

RAILWAY Talents

April 2016

Fig. 2 A completed template of Rail Career Sheet [14]

By the end of June 2016 there were 76 rail career sheets submitted by rail professionals and academics. All submitted sheets were then checked, pictures of individuals were requested and career sheets were published online on the Railway Talents website (<http://railtalent.org>) as a text as well as in a PDF printable format, if submitted as PPT originally.

4 Analysis of results

4.1 Characteristics of the sample

Overall, by spring 2016 there were 76 completed Rail Career Sheets published on the Railway Talents website. The sample includes 23 females and 54 males. The great majority of the respondents represent industry (58 respondents) and minority works in academia (15) with 3 individuals working for both sectors (academia and industry). 50 respondents hold a degree in higher education at BSc, BEng, MSc, MEng, MBA or a PhD level (in mechanical engineering, civil engineering, accountancy, business, marketing, etc.). Although the respondents' nationalities were not investigated, at the time of the Sheets collection they worked in 25 different countries with most popular countries of residence being United Kingdom (14), Brazil (9), Italy (6) and Switzerland (5) with 54 individuals based in Europe, 10 in Asia, 9 in South America (Brazil) and the remaining 2 in the USA and Australia (one respondent represents the UK and Thailand). All the Sheets were completed in English, but for the majority of the sample English was not their native language.

Next, descriptive answers to the six core questions included on the Sheet were coded and plotted using a free online tool called 'WordSift'. The coded results for each of the questions were then displayed in a 'word cloud' format where font size of a word displayed reflects how popular the word was amongst the respondents' answers with words written with a larger font being more popular (mentioned more often) than words written with a smaller font.

4.2 Rail industry as a choice

The respondents were asked about reasons they chose to work for the rail industry. It is clearly visible on fig. 3 that in respondents' descriptive answers most common motives for choosing the railway industry as a career option were related to interest (also mentioned as a passion) in the broad subject of railways (33), where this could include passion for technology or interest since childhood. Next set of popular answers was motivated by wide career prospects (26), with new markets and opportunities for development and innovation, and a

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recognition of transferable skills (11). There were also few people who wanted to work for the railways as it is an environmentally friendly mode of transport (6). Moreover, few people admitted that they never planned to work for the railways (7), but gained interest through job. Also, few respondents mentioned that it was their family or colleagues who positively influenced their choice (5) to join the railways.



Fig. 3 Word cloud listing reasons why rail industry was chosen as a career option.

4.3 Inspiration

Next, the respondents were asked a similar question to the previous one, but this time related to inspiration and influence on their choice to join the railway industry. Fig. 4 presents results where 'interest' clearly stands out (18), meaning that some simply enjoyed rail-related subjects during their studies or, as in the previous question, sustained the interest since childhood. However, career prospects (11) and opportunities (11) offered by the rail industry were recognised by many respondents who stated that future developments as well as an international nature of the business have contributed to the image of the industry with many interesting job opportunities. Also, transferable skills convinced some people that a career in the railways is for them. One respondent, with a career in Risk & Value Management, said: "I wanted a career in which I would be able to indulge many of my interest and abilities, such as mathematics, economics and geography. The variety of work involved in both project and strategic management on the railway allows this". In addition, the respondents highlighted that family members, colleagues or university lecturers inspired them to aspire for a career in the railways (12). Few people also mentioned transferable skills (5), which encouraged them to engage with the railways.



Fig. 4 Word cloud listing inspirations for joining the rail industry.

4.4 Feelings and expectations

The respondents were asked a question about how it feels to be in the rail industry and whether their expectations are fulfilled. Fig. 5 shows variety of answers given with about ten words describing their feelings and expectations standing out in the word cloud. The most popular answer was positive saying that expectations are indeed 'fulfilled' (12), followed by a simple 'yes' (11). However, some people highlighted that their careers are 'challenging' (11), which in this context is positive as their duties force them to be creative and they do enjoy it. One respondent, with a career in customer service, stated clearly that: *"I have had a very fulfilling career – and I have never been bored!"*

Overall, the great majority of comments related to feelings and expectations were positive (rewarding, satisfied, great, proud, etc.) with only few negative observations, including expressions like e.g. half-fulfilled or frustrated.



Fig. 5 Word cloud listing feelings and expectations related to careers in the rail industry.

4.5 Challenges

When asked about challenges the railway industry is facing in the future the respondents identified many issues, as can be seen on fig. 6. The challenges mentioned can be divided into four categories: people-related, technology-related, legislation-related and other.

The people-related challenges include issues with staff (11) where on one hand there is sometimes a reluctance to change among the existing rail staff and on the other hand there is a need for well-educated and skilled talents. Knowledge-sharing (4) between people and sectors should be also improved.

The technology-related issues, such as implementation of new technologies and software (5) leading to improvements (7) and innovation overall (5), put a higher demand on efficiency of the system as a whole (5) and its competitiveness (7) with other modes of transport (from customer's perspective) and with other sectors (from workforce's perspective).

The legislation-related challenges, highlighted by 5 respondents, are actually a big problem, too. As one female rail expert commented, the issue is that *"Constant changes in railway legislation at EU level (...) need to be implemented at national field"* which causes extra workload and sometimes delays.

In the 'other issues' category, challenges such as rail safety (7), sustainability, and stronger links between research and implementation were mentioned, among many other issues.



Fig. 6 Word cloud listing challenges the rail industry faces.

4.6 Definition of a talent

Finally, as the Rail Career Sheet is part of the Railway Talents project, a question about how the respondents understand a term 'talent' was asked. People's answers varied, but most commonly used words are displayed on fig. 7. What is striking is variety of words on the word cloud with few large font words only showing that respondents describe a "talent" in their own way and there is not a one standard definition or understanding of the term across the sector in variety of jobs and countries the respondents represent. However, as expected, words such as e.g. 'knowledge', 'ability', 'skill', 'passion', 'challenge' or 'innovative' do occur.



Fig. 7 Word cloud listing words used to define a 'talent' and the need for engagement with talents.

4.7 Talent engagement

Following the question about a definition of a talent a follow-up question about reasons why the rail industry should engage with talents was asked. Although not all the respondents gave an answer to this question, the most common motivation for talent engagement was the need to supply technical development and creativity to the rail sector by offering jobs to people who have an understanding of future trends and can shape them in order to keep up the railways with modern life. Therefore the industry needs to improve and innovate to be able to supply talents to all levels and groups listed on the Rail Careers Matrix so that new talents can fill in the generation gap and guarantee interaction and knowledge-sharing between the old and the young rail

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professionals. By actively engaging with talents the rail industry will enlarge its pool of dedicated people who will inject vigour and vitality to the sector by delivering fresh ideas and overall improving the railway sector.

It has also been recognised that talent drives excellence, so if the railway industry “*wants to be excellent [it] must have talents in [its] ranks*”. Moreover, one respondent recognised that the Railway Talents project “*is the base for the potential, knowledge, innovation and international friendship*”. This was also reinforced in another opinion that “*the rail industry is more than just engines or project managers*” and we all should contribute to improving the image of the industry and engage with talents for the future of the railways as “*talents inspire more talents*”.

5 Conclusions

The study analysed opinions and attitudes related to the railways and its challenges expressed by rail professionals who completed the Rail Career Sheets available online or in a PPT format. Effort has been made to analyse the descriptive answers given and code them appropriately, where and when relevant. The presented result highlights the image of the rail industry, as seen by its employees, mainly at managerial and strategic positions. Overall, the image that is drawn from the analyses is positive and the great majority of the respondents who work for the rail industry are happy and their expectations in terms of career are fulfilled. However, there are number of limitations which can be identified in the presented study.

Firstly, the sample size studied in the paper is rather small (76 respondents) in comparison to the amount of workforce employed by the railways. Also, majority of the professionals who completed the Rail Career Sheet template were volunteers contacted by the Railway Talents project. It would be beneficial for the project to attract more rail employees from beyond the immediate project's network to complete the Sheet.

Secondly, the sample included mainly managers and ‘white collars’. Diversity in terms of the levels of the Matrix as well as gender and geographical coverage is needed when expanding the collection of Rail Career Sheets in the future in order to promote the whole spectrum of railway careers, as presented on the Rail Careers Matrix.

Thirdly, age of respondents is unknown, as they were not asked socio-economics’ questions. Therefore it is difficult to say which respondents have more experience in working in the railway sector and which were quite fresh to it.

Finally, it has been recognised that the railway sector is very large and offers many career options, but people do not really realise this until they enter it. This also reinforces the issue of an image of the railways carried by people outside of the sector and there is definitely a room for improvements here in the way the industry communicates with their clients, but also with the general public and with potential rail talents.

6 Recommendations

After presenting analyses of the results and listing limitations of the study it is a good practice to list recommendations for further studies and projects, building on the presented research.

It must be said that the worldwide railway industry is improving its image, but still could do much more to change people's perception of the industry and to promote railway careers to potential rail talents. This could be achieved by:

- supporting large-scale career and community events and engaging with the public during events such as e.g. Rail Week, Rail Careers Week, Mobility Week, as well as career events in schools and job fairs at universities;
- upskilling the talents by offering a portfolio of rail resources in various subjects (STEM, social sciences, business, etc.) e.g. free online courses addressed to students, career advisors, professionals, etc.;
- encouraging local and global schemes engaging with talents in a sustainable way by offering work placements, technical visits, scholarships, mentoring schemes, etc. to students and young professionals;
- actively engaging in research projects aiming at identifying skills of the future (e.g. EC-funded Skillful project) needed in order to digitalise and modernise the railway sector as a whole.

In addition, UIC has already initiated a couple of new projects aiming at unifying the offer addressed to potential railway talents. Projects such as e.g. eLearning, supported by RailUniNet, aims to offer online courses to those new to the railway industry who need to or want to expand their knowledge of rail-related issues (e.g. rail asset management, rail safety and security). Another initiative is targeting the current rail professionals as well as those outside of the sector, graduates and all individuals interested in exploring career options in the railway sector. eCareers platform aims to act as a one-stop shop with job offers and basic information about various railway companies, UIC members to start with.

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7 Next steps

The Rail Career Sheet initiative is an ongoing project which is open to all rail professionals and academics worldwide. It contributes to the Railway Talents project, which acts as an umbrella for a number of initiatives aiming at attracting and retaining railway talents for the better railways of the future.

In terms of next steps with the study the following points are proposed:

- To collect a larger and more diverse sample of rail professionals and academics in order to be able to understand better how people define a railway talent and what methods could be useful in promotional and engagement activities;
- To launch the new portals addressed to railway talents (e.g. eCareers, eLearning, etc.) in order to promote the sector to various target groups at a global scale;
- To engage with youngsters using tools they use (e.g. social media) and survey young talents on what would convince them to consider careers in the railways.

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